



Basic raw materials

Surficial materials

- Beachrock: Pale orange, calcareous, cemented, shell and coral debris, coastal, shoreline platforms
- Ferrirete: Reddish brown, psillic or massive lateritic duricrust, residual, low, undulating surfaces and paleochannel lines
- Limesand: Pale pinkish grey quartz sand and shell debris, eolian, coastal dunes, spits and low ridges
- Limestone: Pale yellowish brown sandy limestone, variably thickbed, eolian, shore-parallel low ridges
- Sand and gravel: Reddish brown to orange brown, fine- to coarse-grained, poorly sorted, subangular quartz sand; alluvial channels
- Alluvial sand: Pinkish grey, medium- to coarse-grained sand and gravel with cobbles and boulders; alluvial channels
- Alluvial sand and gravel: Reddish brown to yellowish brown silty sands and sandy silts; alluvial floodplains
- Floodplain sand: Pale reddish brown to yellowish brown clayey and silty sands; alluvial, outwash plains
- Levee sand: Pale reddish brown to yellowish brown clayey and silty sands; alluvial, outwash plains
- Outwash plain clayey sand: Pale reddish brown to yellowish brown clayey and silty sands; alluvial, outwash plains
- Outwash plain sand and gravel: Red and reddish brown gravel, sand and silt, local carbonate cement; alluvial, outwash plains
- Outwash plain silty sand: Reddish brown to yellowish brown silty sand; alluvial, outwash plains
- Quartzofelspathic sand: Red, fine- to medium-grained quartz sand; residual and sheetwash; sandy surfaced plains
- Residual sand: Yellowish to reddish brown, fine- to medium-grained calcareous sand; residual, low ridges
- Supratidal sand: Yellowish to pinkish brown, medium- to coarse-grained calcareous sand; eolian, low dunes
- Spot bank: Pale yellowish brown, medium- to coarse-grained sand with some gravel layers; made ground

Hard rocks

- Igneous and metamorphic rocks: Pink to grey, medium- to coarse-grained granitic rock; exposed, rugged hills, ridges and low hills
- Granite: White to pale grey, massive quartz, with some iron oxide staining; exposed, strike ridges
- Quartz: White to pale grey, massive quartz, with some iron oxide staining; exposed, strike ridges

Analyses

Limesand

CaCO₃ Acid insoluble residue

Limestone

CaCO₃ Acid insoluble residue

Sand and gravel

Gravel Fines Sand

Tenement for basic raw materials

Mining lease, live (Mining Act 1978)

Crown reserve for basic raw materials

Township (Land Administration Act 1957)

DATA SOURCES

Name	Date	Contingency	Organization
Basic raw materials	2013		Geological Survey of Western Australia, Department of Mines and Petroleum
Topography	2013		Landgate
Contours	2006		Geological Survey of Western Australia, Department of Mines and Petroleum
Mining tenements	2013		Mineral Titles Division, Department of Mines and Petroleum

Quarries and pits

- Active
- Inactive
- Proposed

CA Calcrete, calciche
 GR Gravel
 LS Limesand
 LI Limestone
 CR Crystalline rock
 S Sand

- Aboriginal Community
- Homestead
- Locality
- Highway
- Major road
- Minor road
- Railway, operating
- Drainage network
- Contour, elevation in metres

Basic raw materials on this map have been compiled from existing Geological Survey of Western Australia maps. Uncontoured areas indicate unbedded bedrock and surficial deposits not considered basic raw material resources.

Surficial materials

Beachrock

At or near present-day high-tide levels, a lime-cemented beach conglomerate occurs at many places along the coast. The material comprises angular to subangular shells, corals, sponges, rounded quartz grains and occasional pebbles of beachrock. It is a hard orange-coloured calcareous matrix. Because of its position in the landscape, this material has limited potential as a source of lime.

Ferrirete

Ferrirete is found in the southeast of the area as small, widely scattered outcrops developed along paleochannel lines near Protondra Hill where it is a reddish brown, hard, bubbly psillic or massive lateritic duricrust up to 3 m in thickness. Several inactive pits are in this material.

Limesand

Dunes and some ridges of pale pinkish grey quartz sand and shell debris occur along the whole coastline of the seaward and landward margins of the flat flats. They are up to 8 m high with gently inclined slopes and undulating surfaces. They have been worked at Boulder and to the east of Port Hedland. The most seaward dunes are susceptible to wave and wind erosion. CaCO₃ values are generally very low. Groundwater is generally more than 10 m below the ground surface.

Limestone

Low-lying ridges of calcareous sandstone up to 100 m wide and several kilometres long run along the whole coastline. The limestone is pale yellowish brown, contains quartz and shell debris and is variably thickbed. CaCO₃ values range from 43% to 72%. There are no active workings, but material has been extracted at Boulder and east of Port Hedland. These ridges have limited potential as a source of lime.

Sand and gravel

Alluvial sand

High red sand units form north-trending ridges between the Turner River and South Hedland 5-10 m higher than the surrounding plain. The sand is a reddish brown to orange brown, fine- to coarse-grained, poorly sorted, subangular quartz sand with low silt content. A single active pit 1.5 km south of Boulder Hill exploits this resource.

Coarse-grained sand and gravel

Coarse-grained sand and gravel occur along the major watercourses - Turner River, Beveridge and Pilemair Creeks - where they comprise pinkish grey, medium- to coarse-grained sand with variable amounts of subangular to subrounded, pebbles, cobbles and boulders of bedrock. Large, slightly eroded tabular crystals are found along Beveridge Creek. The Turner River in particular contains a number of active workings.

Floodplain sand

Along Beveridge Creek and around the two branches of the Turner River floodplain sediments are characterised by numerous, and generally very minor, drainage channels. The sediments comprise reddish brown to yellowish brown, fine-grained, very silty sand and sandy silt. Claypans and swelling and shrinkage pits are common. Several inactive pits are found along Beveridge Creek.

Levee sand

Along the Turner River and at Pilemair on Beveridge Creek levees are found a few metres above the level of the surrounding plains. The levees are composed of pale reddish brown, medium- to coarse-grained, slightly silty sand. Active quarries are found in this material at Sandy Hill and east of Mullaroo Hill.

Outwash plain clayey sand

On parts of the coastal plain, particularly on the west of the area, reworking of the outwash plain silty sand has formed areas of clayey sand with extensive development of claypans. Sediment types range from pale reddish brown to yellowish brown, clayey and silty, fine- to medium-grained sands to sandy clay, and swelling and shrinkage claypans. Claypans are ringed by low knifed of pale reddish brown eolian sand.

Surficial materials

Sand and gravel

Outwash plain sand and gravel

A small outwash plain fans (Pilemair) Creek in the south-west of the area. This plain comprises carbonated cemented red or reddish brown gravel, sand and silt with sparse matrix of pebbles and gravel of bedrock. No pits are known in this material. Thicknesses vary widely but are generally less than 5 m.

Outwash plain silty sand

Eolian outwash plains are found in the central and south of the area. These plains comprise a variety of sediment types but the most common is a reddish brown to yellowish brown silty sand composed of unsorted to poorly sorted, fine- to coarse-grained, subangular to subrounded quartz grains with minor amounts of halimite and rock fragments. Thicknesses vary markedly but are generally less than 5 m. Many pits are known in this material but only a few are active. Groundwater is generally less than 10 m below the ground surface.

Quartzofelspathic sand

Downs of red yellow, fine- to medium-grained quartzofelspathic sand, occasionally containing quartz and rock fragments, are found east of Protondra Hill. The sand is derived from the weathering of the underlying granitoid bedrock or nearby outcrops. Most of the material is in situ. The material is sandy more than 2 m thick.

Residual sand

Pale yellowish brown to reddish brown, fine- to medium-grained, slightly to moderately silty, non-calcareous sand overlies and flanks the limestone ridges. It formed by desiccation of the limestone. The presence of shell fragments of Anadara grasses suggests the process is continuing. This material has not been worked.

Supratidal sand

Pale yellowish brown to pinkish brown, medium- to coarse-grained, subangular to subrounded calcareous sand is found as rounded and low lying to almost flat lying dunes at the inland margin of the supratidal flats. Shell fragments are common but whole shells of Anadara grasses are scarce. This material has not been worked.

Spot bank

The spot bank is an elongate, gently emergent structure up to 3 m long and 400 m wide, oriented to the north and resting on the nearshore shelf. It comprises dune top from the Port Hedland dune system and occurs as a series of crests, spits and lines of sand overlapping a core of coarse to very coarse sand with scattered gravel or gravel layers. Thicknesses of material are generally less than 3 m.

Hard rocks

Igneous and metamorphic rocks

Granite

Granite includes orthogneiss and leucogneiss. They are found in the southeast part of the area where they crop out as low hills and domes with extensive rock outcrop and boulder down slopes. Granites are generally pink to grey, medium- to coarse-grained, equigranular rocks, although porphyritic and other textures are common. There are no active workings.

Quartz

Quartz crops out sporadically around White Hill and Babba Currie Hill. The vein trends north-south and comprises milky white to pale grey, massive quartz with patchy reddish and yellowish brown iron oxide staining. The vein ranges up to 30 m in thickness and is extensively eroded. There are no active workings but several inactive quarries exist.



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Scale 1:50 000

RESOURCE POTENTIAL FOR LAND USE PLANNING
Basic Raw Material Resources
PORT HEDLAND

This map was produced at the request of the Western Australian Planning Commission specifically to identify potential basic raw material resources within 25 km of Port Hedland, with funding from the Government of Western Australia through the State Natural Resource Management Program.

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